Challenge #1

There are 𝑛 football teams in the world.

The Main Football Organization (MFO) wants to host at most 𝑚 games. MFO wants the 𝑖-th game to be played between the teams 𝑎𝑖 and 𝑏𝑖 in one of the 𝑘 stadiums.

Let 𝑠𝑖𝑗 be the numbers of games the 𝑖-th team played in the 𝑗-th stadium. MFO does not want a team to have much more games in one stadium than in the others. Therefore, for each team 𝑖, the absolute difference between the maximum and minimum among 𝑠𝑖1,𝑠𝑖2,…,𝑠𝑖𝑘 should not exceed 2.

Each team has 𝑤𝑖 — the amount of money MFO will earn for each game of the 𝑖-th team. If the 𝑖-th team plays 𝑙 games, MFO will earn 𝑤𝑖⋅𝑙.

MFO needs to find what games in what stadiums they need to host in order to earn as much money as possible, not violating the rule they set.

However, this problem is too complicated for MFO. Therefore, they are asking you to help them.

Input

The first line contains three integers 𝑛, 𝑚, 𝑘 (3≤𝑛≤100, 0≤𝑚≤1000, 1≤𝑘≤1000) — the number of teams, the number of games, and the number of stadiums.

The second line contains 𝑛 integers 𝑤1,𝑤2,…,𝑤𝑛 (1≤𝑤𝑖≤1000) — the amount of money MFO will earn for each game of the 𝑖-th game.

Each of the following 𝑚 lines contains two integers 𝑎𝑖 and 𝑏𝑖 (1≤𝑎𝑖,𝑏𝑖≤𝑛, 𝑎𝑖≠𝑏𝑖) — the teams that can play the 𝑖-th game. It is guaranteed that each pair of teams can play at most one game.

Output

For each game in the same order, print 𝑡𝑖 (1≤𝑡𝑖≤𝑘) — the number of the stadium, in which 𝑎𝑖 and 𝑏𝑖 will play the game. If the 𝑖-th game should not be played, 𝑡𝑖 should be equal to 0.

If there are multiple answers, print any.

Example

input

7 11 3

4 7 8 10 10 9 3

6 2

6 1

7 6

4 3

4 6

3 1

5 3

7 5

7 3

4 2

1 4

output

3

2

1

1

3

1

2

1

2

3

2